

REMARKS

Claims 29-48 are now in the application. Claims 1, 3-5, 8, 10, 11, 15, 17-24, 26 and 28 have been cancelled without prejudice or disclaimer. The newly presented claims do not introduce any new matter. Independent claim 29 relates to a cation electrodeposition method. The method comprises conducting surface treatment on a metal base material by a chemical conversion coating agent to form a chemical conversion coat and then washing the metal base material with water without drying. See Example 1 at page 18, lines 20-24 of the specification. The cation electrodeposition coating is carried out in a wet condition. The chemical conversion coating agent comprises: at least one member selected from the group consisting of zirconium, titanium and hafnium; and fluorine; and at least one member selected from the group consisting of amino group-containing silane coupling agent, hydrolysates thereof and polymers thereof. In addition, the chemical conversion coating agent has substantially no phosphate ion. In particular, the specific anticorrosion paint of Bittner preferably contains phosphate ions.

Claims 1, 3-5, 8, 10-11, 15, 17-24, 26 and 28 are rejected under 35 USC 103(a) as being unpatentable over WO 02/24344 to Bittner et al. (hereinafter also referred to as "Bittner"). Bittner fails to render obvious the present invention since, among other things, Bittner requires the inclusion of phosphate ions. Along these lines, please see tables 1 and 2 therein. Moreover, all of the examples of anticorrosion paints that include an amino silane, that are specifically described in the Examples, include phosphate ions.

The beneficial effects of a phosphate free chemical conversion coating are described in the background of the invention in the present application. Despite the imparting of adhesiveness of the chemical conversion coating to an upper film by the phosphate, a chemical conversion coating that contains a phosphate requires a liquid waste treatment to minimize negative environmental impact. The present invention provides a cation electrodeposition coating method using a chemical conversion coating agent that is at least substantially phosphate free, and therefore is non-obvious over Bittner.

In addition, Bittner fails to suggest washing without drying as recited in the present claims. Instead, Bittner suggests a "drying on process" and "a rinse process" in paragraph

[0067]. A rinse process as well as a drying process ultimately requires drying as described in paragraph [0068].

Contrary to the present invention, chemical conversion coating films formed by a conventional chemical conversion coating agent in Bittner requires drying after chemical treatment to improve adhesion with the metal base material. However, metal base materials that undergo cation electrodeposition method have complex shapes as is the case with automobile bodies. Therefore, it is difficult to achieve sufficient drying after the chemical conversion treatment. Moreover, because drying of metal base material generates water stains, a chemical conversion treatment that does not require drying prior to cation electrodeposition coating as achieved by the present invention is extremely desirable.

In addition, Bittner does not disclose cation electrodeposition and it is not even apparent that the coated substrates of Bittner could be subjected to cation electrodeposition.

Claims 25 and 27 were rejected under 35 USC 103(a) as being unpatentable over Bittner and further in view of US Patent 4,130,431 to Kogure. Kogure does not overcome the above discussed deficiencies of Bittner with respect to rendering obvious the present invention. Kogure was relied upon for a disclosure of applying a zirconium, titanium containing acid coating solution to metal surfaces for rust prevention and also using spraying, dipping or electrodepositing to apply the coating. Also, Kogure requires a drying step. All of the examples in Kogure require a drying process as described in Comparative Tests at column 8 thereof.

The description at column 4, lines 12-13 illustrates the method of applying the metal treatment liquid. The "electrodepositing" in Kogure refers to the electrodeposition of the metal treatment liquid (i.e. the chemical conversion coating agent of the present invention). In other words, Kogure merely suggests that the paint is applied by electrodeposition, but fails to disclose or even remotely suggest that the paint is applied for pretreatment followed by cation electrodepositing of a coating. (also see col. 9, lines 29-34).

Claims 1, 4-5, 11 and 26 were rejected under 35 USC 103(a) as being unpatentable over US 2004/0094235 to Rodzewich et al. (hereinafter also referred to as "Rodzewich"). Rodzewich fails to render obvious the present invention since, among other things, Rodzewich require a drying process. All of the examples disclosed in Rodzewich require a drying process. It is noted that in Rodzewich, powder coating is conducted after chemical conversion coating. Drying of the

metal base material is necessary as would be appreciated by those skilled in the art. Therefore, drying is deemed to be conducted after chemical conversion coating in Rodzewich. The importance of excluding drying is discussed herein above.

Moreover, the material treated with the composition is painted with a clear coat acrylic powder from PPG (see paragraph [0042], Example 1). Rodzewich does not contemplate cation electrodepositing.

Claim 25 was rejected under 35 USC 103(a) as being unpatentable over Rodzewich and further in view of Kogure. Kogure does not overcome the above discussed deficiencies of Rodzewich with respect to rendering obvious the present invention. Kogure was relied upon for a disclosure of applying a zirconium, titanium containing acid coating solution to metal surfaces for rust prevention and also using spraying, dipping or electrode depositions to apply the coating. The above discussion of Kogure is incorporated herein by reference.

These differences are based on the fact that a chemical conversion coating film formed on the surface of the metal material in the present invention is formed in by a different mechanism from that of a surface treatment coat formed by the surface treatment liquid disclosed in conventional publications such as Bittner. That is, the chemical conversion coating film of the present invention is formed by incorporating aminosilane into the chemical conversion coating film when a zirconium containing chemical conversion coating film is formed by the chemical reaction which occurs at the interface of a metal material and a chemical conversion agent. This allows the chemical conversion coating film to sufficiently adhere to the metal material without the need of a drying process following the chemical conversion treatment.

Claims 3, 8, 10, 15, 17-24 and 28 were again rejected under 35 USC 103(a) as being unpatentable over US 2004/0094235 A1 to Rodzewich in view of US 2003/0221751A1 to Claffey. Claffey does not overcome the above discussed deficiencies of Rodzewich with respect to rendering obvious the present invention. Claffey requires a phosphate ion as an essential component. Moreover, it is noted that in Claffey, like Rodzewich, powder coating is conducted after chemical conversion coating. Drying of the metal base material is necessary as would be appreciated by those skilled in the art. Therefore, drying is deemed to be conducted after chemical conversion coating in Claffey. Claffey was relied upon for disclosing a zirconium/titanium base fluoride compound containing conversion coating solution for treating

metal surfaces such as iron and aluminum. Also, Claffey was relied upon for a disclosure of adding accelerators such as chlorates, bromates, perchlorates, chlorites, and nitrates in an amount of about 0.01 to about 3% to the coating composition.

Claim 27 was rejected under 35 USC 103(a) as being unpatentable over Rodzewich in view of Claffey and further in view of Kogure. Claffey and Kogure do not overcome the above discussed deficiencies of Rodzewich with respect to rendering obvious the present invention. The above discussions of Kogure and Claffey are incorporated herein by reference.

Regarding the use of the term "for cationic electrocoating," it was asserted in the final office action that such term does not lend patentability to the instant claims. The claims as now presented include the step of cation electrodepositing. As mentioned above, cation electrocoating is usually applied to materials having complex shapes such as those of automotive bodies. The method according to the present invention can be described as a method particularly suitable to chemical conversion treatment of materials having such complex shapes.

In other words, surface treatment agents conventionally known up to the filing date of the present application had required the inclusion of film forming components such as polymers, and a drying process in most cases after being surface treated. The drying process was required to fix the surface treatment coat onto the metal base material, due to inadequate adhesion between the surface treatment coat and the metal base material.

On the other hand, chemical conversion treating agents according to the present invention realize improved adhesion between the chemical film and the metal base material and, as a result, making subsequent cationic electrocoating possible even without a drying process.

These differences are based on the fact that a chemical conversion coating film formed on the surface of the metal material in the present invention is formed by a different mechanism from that of a surface treatment coat formed by the surface treatment liquid discussed in conventional publications such as Bittner. That is, the chemical conversion coating film of the present invention is formed by incorporating aminosilane into the chemical conversion coating film when a zirconium containing chemical conversion coating film is formed by the chemical reaction which occurs at the interface of a metal material and a chemical conversion agent. This allows the chemical conversion coating film to sufficiently adhere to the metal material without the need of a drying process following the chemical conversion treatment.

One should keep in mind that complex objects to be cationic electrocoated such as automotive bodies were difficult to dry due to the complexity of the structures thereof so that the production line had to be changed to perform the drying, as mentioned above (see Figure 1). Further, another problem was that water stains remain on the surface after the drying process. The pretreatment method for coating according to the present invention realizes that the subsequent cation electrocoating can take place even without the drying process followed by the chemical conversion treatment. Furthermore, in the same manner, reciting the use for cationic electrocoating realizes effects such as no drying process required and prevention of occurrence of water stains, which tends to support the nonobviousness of the present invention.

It was asserted in the final office action that the cationic electrocoating is as if it is a method to be adopted in treating a metal base material with a chemical conversion treating agent. However, this assertion appears to be erroneous.

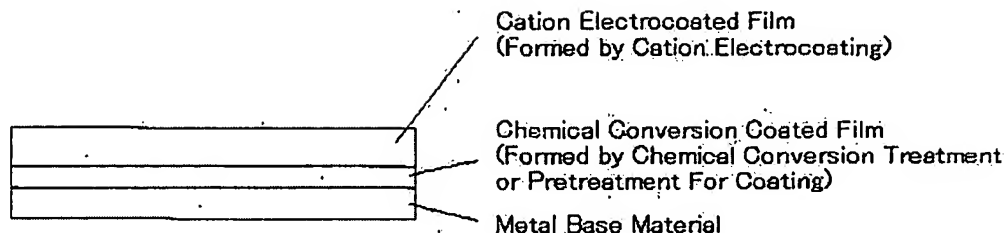
The method for coating a metal base material intended by the present invention includes: in general, i) degreasing the metal base material when the situation demands; ii) performing the chemical conversion treatment by bringing a chemical conversion treating agent into contact with the metal base material; and iii) then performing the cationic electrocoating by using a cationic electrocoating paint.

As a result, as shown below in Fig. 2 below, a chemical conversion coat and a cationic electrocoated film are formed sequentially in this order on the metal base material.

The chemical conversion treatment includes etching the metal base material with an acid substance contained in a chemical conversion treating agent, and having an oxide coat or film of zirconium formed by the interaction between metal ion dissolved by the etching and zirconium or the like present in the chemical conversion treating agent which has been used. This kind of chemical conversion treatment method is fundamentally different from the cationic electrocoating.

The cationic electrocoating is not a method for performing a chemical conversion treatment.

[Fig. 2] A metal material formed by a method for coating a metal base material intended by the present invention



Furthermore, the cited art lacks the necessary direction or incentive to those of ordinary skill in the art to render the rejection under 35 USC 103 sustainable. The cited art fails to provide the degree of predictability of success of achieving the properties attainable by the present invention needed to sustain a rejection under 35 USC 103. See *KSR Int'l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727; 82 USPQ2d 1385 (2007), *Diversitech Corp. v. Century Steps, Inc.* 7 USPQ2d 1315 (Fed. Cir. 1988), *In re Mercier*, 185 USPQ 774 (CCPA 1975) and *In re Naylor*, 152 USPQ 106 (CCPA 1966).

Moreover, the properties of the subject matter and improvements which are inherent in the claimed subject matter and disclosed in the specification are to be considered when evaluating the question of obviousness under 35 USC 103. See *KSR Int'l Co. v. Teleflex, Inc.*, supra; 82 USPQ2d 1385 (2007), *Gillette Co. v. S.C. Johnson & Son, Inc.*, 16 USPQ2d. 1923 (Fed. Cir. 1990), *In re Antonie*, 195, USPQ 6 (CCPA 1977), *In re Estes*, 164 USPQ 519 (CCPA 1970), and *In re Papesch*, 137 USPQ 43 (CCPA 1963).

No property can be ignored in determining patentability and comparing the claimed invention to the cited art. Along these lines, see *In re Papesch*, supra, *In re Burt et al*, 148 USPQ 548 (CCPA 1966), *In re Ward*, 141 USPQ 227 (CCPA 1964), and *In re Cescon*, 177 USPQ 264 (CCPA 1973).

In view of the above, consideration and allowance are respectfully solicited.

In the event the Examiner believes an interview might serve in any way to advance the prosecution of this application, the undersigned is available at the telephone number noted below.

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The Office is authorized to charge any necessary fees due with this response to Deposit Account 22-0185, under Order No. 27617-00003US1 from which the undersigned is authorized to draw.

Respectfully submitted,

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Electronic signature: /Burton A. Amernick/
Burton A. Amernick
Registration No.: 24,852
CONNOLLY BOVE LODGE & HUTZ LLP
1875 Eye Street, NW
Suite 1100
Washington, DC 20006
(202) 331-7111
(202) 293-6229 (Fax)
Attorney for Applicant